

PERRY JOHNSON LABORATORY ACCREDITA TION, INC.

Certificate of Accreditation

Perry Johnson Laboratory Accreditation, Inc. has assessed the Laboratory of:

Automated Control Systems, Inc. dba ACS Calibration 3124 W. Main St., Dothan, AL 36305

(Hereinafter called the Organization) and hereby declares that Organization is accredited in accordance with the recognized International Standard:

ISO/IEC 17025:2017

This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (as outlined by the joint ISO-ILAC-IAF Communiqué dated April 2017):

Dimensional, Electrical, Mechanical, Thermodynamic, and Mass, Force, and Weighing Devices, and Time & Frequency (As detailed in the supplement)

Accreditation claims for such testing and/or calibration services shall only be made from addresses referenced within this certificate. This Accreditation is granted subject to the system rules governing the Accreditation referred to above, and the Organization hereby covenants with the Accreditation body's duty to observe and comply with the said rules.

For PJLA:

Tracy Szerszen President

Perry Johnson Laboratory Accreditation, Inc. (PJLA) 755 W. Big Beaver, Suite 1325 Troy, Michigan 48084

Initial Accreditation Date:

February 22, 2018

Issue Date:

Expiration Date:

May 29, 2022

September 30, 2024

Accreditation No.: 98908

Certificate No.: L22-401

The validity of this certificate is maintained through ongoing assessments based on a continuous accreditation cycle. The validity of this certificate should be confirmed through the PJLA website: www.pjlabs.com



Automated Control Systems, Inc. dba ACS Calibration

3124 W. Main St., Dothan, AL 36305 Contact Name: Mr. Dustin Pybus Phone: 334-792-0113

Accreditation is granted to the facility to perform the following calibrations:

| Dimensional | | | |
|---|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Calipers ^{FO} | 0.5 in to 9 in | (33 + 5.7L) µin | Grade 0 Gage Blocks |
| | 175 mm to 300 mm | $(2.4 + 0.005L) \mu m$ | Grade 3 Gage Blocks |
| Height Gages FO | 0.05 in to 8 in | (47 + 4.3L) μin | Surface Plate |
| Micrometer ^{FO} | 0.05 in to 6 in | $(42 + 5.2L) \mu in$ | Ring Gauge |
| Indicators FO | 0.05 in to 4 in | (1.3 + 30L) µin | WI-04-08 |
| | | | Methods |
| | | | Calipers WI-05 |
| | | | Height Gage WI-07 |
| | | | Micrometers WI-04 |
| | | | Indicators WI-06 |
| Optical Comparators | 0.1 mm to 100 mm | 0.0039 mm | Glass Scale |
| X and Y Axis Linearity FO | | | WI-23 |

| Electrical | | | |
|---|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Measure | 0.01 µA to 100 µA | 25 nA + 0.061 % of reading | Fluke 8846A |
| DC Current ^{FO} | 100 µA to 1 mA | 0.05 µA + 0.059 % of reading | WI-17 |
| | 1 mA to 10 mA | $2 \mu A + 0.061$ % of reading | |
| | 10 mA to 100 mA | 5 µA + 0.06 % of reading | |
| | 100 mA to 1 A | 0.2 mA + 0.062 % of reading | |
| | 1 A to 3 A | 0.6 mA + 0.12 % of reading | |
| | 3 A to 10 A | 0.8 mA + 0.18 % of reading | |
| Equipment to Measure DC | 0.01 µA to 100 µA | 0.060 % of reading + 25 nA | |
| Current ^{FO} | 100 µA to 1 mA | 0.061 % of reading + 0.05 µA | |
| | 1 mA to 10 mA | 0.063 % of reading + 2 µA | |
| | 10 mA to 100 mA | 0.061 % of reading + 5 µA | |
| | 100 mA to 1 A | 0.066 % of reading + 0.2 mA | |
| | 1 A to 3 A | 0.13 % of reading + 0.6 mA | |
| | 3 A to 10 A | 0.19 % of reading + 0.8 mA | |
| Equipment to Output DC | 2 µA to 202 µA | 0.076 μΑ | Transmille 3041 |
| Current ^{FO} | 0.2 mA to 2.02 mA | 0.000 31 mA | WI-12 |
| | 2.02 mA to 20.2 mA | 0.001 9 mA | |
| | 20.2 mA to 202 mA | 0.023 mA | |
| | 0.202 A to 2.02 A | 0.000 34 A | 1 |
| | 2 A to 30 A | 0.016 A | |

This supplement is in conjunction with certificate #L22-401



Automated Control Systems, Inc. dba ACS Calibration

3124 W. Main St., Dothan, AL 36305 Contact Name: Mr. Dustin Pybus Phone: 334-792-0113

| Electrical | | | |
|---|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Measure | 0.1 Ω to 10 Ω | $3 \text{ m}\Omega + 0.13 \%$ of reading | Fluke 8846A |
| Resistance ^{FO} | 10 Ω to 100 Ω | $4 \text{ m}\Omega + 0.012 \%$ of reading | WI-18 |
| | 100 Ω to 1 k Ω | $10 \text{ m}\Omega + 0.012 \%$ of reading | |
| | 1 kΩ to 10 kΩ | $0.1 \Omega + 0.12$ % of reading | |
| | 10 k Ω to 100 k Ω | $1 \Omega + 0.012$ % of reading | |
| | $100 \text{ k}\Omega$ to $1 \text{ M}\Omega$ | $10 \Omega + 0.012$ % of reading | |
| | 1 MΩ to 10 MΩ | $0.1 \text{ k}\Omega + 0.047 \%$ of reading | |
| | 10 MΩ to 100 MΩ | $10 \text{ k}\Omega + 0.95 \%$ of reading | |
| Equipment to Output Resistance | 0.1 Ω to 1 Ω | 0.006 Ω | Transmille 3041 |
| FO | 1 Ω to 10 Ω | 0.007 5 Ω | WI-12 |
| | 10 Ω to 100 Ω | 0.014 Ω | |
| | $0.1 \text{ k}\Omega$ to $1 \text{ k}\Omega$ | 0.000 11 kΩ | |
| | 1 kΩ to 10 kΩ | 0.001 1 kΩ | |
| | 10 k Ω to 100 k Ω | 0.009 7 kΩ | |
| | $0.1 \text{ M}\Omega$ to $1 \text{ M}\Omega$ | 0.000 2 ΜΩ | |
| | 1 MΩ to 10 MΩ | 0.005 4 ΜΩ | |
| | 10 MΩ to 100 MΩ | 0.67 ΜΩ | |
| Equipment to Measure DC | 10 mV to 100 mV | 0.005 1 % of reading + $3.5 \mu V$ | Fluke 8846A |
| Voltage ^{FO} | 0.1 V to 1 V | 0.003 1 % of reading + 7 μ V | WI-19 |
| | 1 V to 10 V | 0.002 9 % of reading + 0.05 mV | |
| | 10 V to 100 V | 0.004 6 % of reading + 0.6 mV | |
| | 100 V to 1 000 V | 0.005 4 % of reading + 10 mV | |
| Equipment to Output | 0.2 mV to 202 mV | 0.009 5 mV | Transmille 3041 |
| DC Voltage ^{FO} | 0.2 V to 2.02 V | 0.000 077 V | WI-12 |
| | 2 V to 20.2 V | 0.000 80 V | |
| | 20 V to 200 V | 0.009 6 V | |
| | 200 V to 1 000 V | 0.052 V | |
| | 10 mF to 100 mF | 0.2 mF + 4.8 % of reading | |



Automated Control Systems, Inc. dba ACS Calibration

3124 W. Main St., Ste. 14, Dothan, AL 36305 Contact Name: Gary McGowan Phone: 334-792-0113

| Electrical | | | |
|--|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Measure | 0.1 nF to 1 nF | 25 nF + 2.7 % of reading | Fluke 8846A |
| Capacitance ^{FO} | 1 nF to 10 nF | 0.05 nF + 1.3 % of reading | WI-11 |
| | 10 nF to 100 nF | 0.5 nF + 1.2 % of reading | |
| | 0.1 μF to 1 μF | 5 nF + 1.2 % of reading | |
| | 1 μF to 10 μF | 0.05 µF + 1.2 % of reading | |
| | 10 μF to 100 μF | 0.5 µF + 1.2 % of reading | |
| | 100 µF to 1 mF | $5 \mu\text{F} + 1.2 \%$ of reading | |
| | 1 mF to 10 mF | 0.05 mF + 1.3 % reading | |
| Equipment to Output | 10 nF | 0.47% of reading | Transmille 3041 |
| Capacitance ^{FO} | 20 nF | 0.47% of reading | WI-12 |
| | 50 nF | 0.47% of reading | |
| | 100 nF | 0.47% of reading | |
| | 1 μF | 0.47% of reading | |
| | 10 µF | 0.47% of reading | |
| Equipment to Measure | 1 µV to 100 mV | $3.5 \mu\text{V} + 0.005 1 \%$ of reading | Fluke 8846A |
| DC Voltage ^{FO} | 100 mV to 1 V | $7 \mu V + 0.003$ % of reading | WI-19 |
| | 1 V to 10 V | 0.05 mV + 0.002 8 % of reading | |
| | 10 V to 100 V | 0.6 mV + 0.004 6 % of reading | |
| | 100 V to 1 000 V | 10 mV + 0.005 % of reading | |
| Equipment to Measure Frequency (at the listed frequencies) ^{FO} | C. C | | Fluke 8846A WI-16 |
| 3 Hz to 5 Hz | 100 mV to 1 000 V | 0.12 % of reading | |
| 5 Hz to 10 Hz | 100 mV to 1 000 V | 0.06 % of reading |] |
| 10 Hz to 40 Hz | 100 mV to 1 000 V | 0.035 % of reading | |
| 40 Hz to 300 kHz | 100 mV to 1 000 V | 0.012 % of reading |] |
| 300 kHz to 1 MHz | 100 mV to 1 000 V | 0.012 % of reading | |



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| Electrical | | | |
|---|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (+) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Output Frequency FO | 1 Hz to 10 MHz | 0.003 5 % of reading | Transmille 3041 WI-12 |
| Equipment to Measure AC Curren | nt | | Fluke 8846A |
| (at the listed frequencies) ¹⁰ | | | W1-1 / |
| 5 Hz to 10 Hz | $0.1 \mu A$ to $100 \mu A$ | $0.4 \mu\text{A} + 0.36$ % of reading | _ |
| 10 Hz to 5 kHz | 0.1 µA to 100 µA | $0.4 \mu\text{A} + 0.12$ % of reading | _ |
| 5 kHz to 10 kHz | 0.1 μA to 100 μA | $0.25 \mu\text{A} + 0.24 \%$ of reading | |
| Equipment to Measure AC Curren (at the listed frequencies) ^{FO} | at 🔺 | | |
| 5 Hz to 10 Hz | 100 µA to 1 mA | $0.4 \mu A + 0.36$ % of reading | |
| 10 Hz to 5 kHz | 100 µA to 1 mA | 0.4 µA + 0.12 % of reading | |
| 5 kHz to 10 kHz | 100 µA to 1 mA | 2.5 µA + 0.24 % of reading | |
| Equipment to Measure AC Curren (at the listed frequencies) ^{FO} | nt | $\left(\right) $ | |
| 5 Hz to 10 Hz | 1 mA to 10 mA | 4 µA + 0.36 % of reading | |
| 10 Hz to 5 kHz | 1 mA to 10 mA | $4 \mu A + 0.12 \%$ of reading | - |
| 5 kHz to 10 kHz | 1 mA to 10 mA | 23 µA + 0.24 % of reading | - |
| Equipment to Measure AC Curren (at the listed frequencies) ^{FO} | nt | | |
| 5 Hz to 10 Hz | 10 mA to 100 mA | 0.04 mA + 0.36 % of reading | |
| 10 Hz to 5 kHz | 10 mA to 100 mA | 0.04 mA + 0.12 % of reading | - |
| 5 kHz to 10 kHz | 10 mA to 100 mA | 0.25 mA + 0.24 % of reading | - |
| Equipment to Measure AC Curren (at the listed frequencies) ^{FO} | at | | - |
| 10 Hz to 5 kHz | 100 mA to 1 A | 0.4 mA + 0.12 % of reading | - |
| 5 kHz to 10 kHz | 100 mA to 1 A | 7 mA + 0.42 % of reading | - |
| Equipment to Output AC Current (at the listed frequencies) ^{FO} | | | - |
| 10 Hz to 44 Hz | 20 µA to 202 µA | 0.98 μΑ | - |
| 45 Hz to 999 Hz | 20 µA to 202 µA | 0.58 μΑ | - |
| 1 kHz to 10 kHz | 20 µA to 202 µA | 4.1 μΑ | - |
| Equipment to Output AC Current (at the listed frequencies) ^{FO} | | | Fluke 8846A WI-17 |
| 10 Hz to 44 Hz | 0.2 mA to 2.02 mA | 0.006 5 mA | |
| 45 Hz to 999 Hz | 0.2 mA to 2.02 mA | 0.002 mA | 1 |
| 1 kHz to 10 kHz | 0.2 mA to 2.02 mA | 0.021 mA | 1 |



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| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Output AC Current | t 2 mA to 20.2 mA | | Fluke 8846A |
| (at the listed frequencies) ¹⁰ | 2 | 0.07 | WI-1 / |
| 10 HZ to 44 HZ | 2 mA to 20.2 mA | 0.07 mA | _ |
| 45 Hz to 999 Hz | 2 mA to 20.2 mA | 0.02 mA | |
| 1 kHz to 10 kHz | 2 mA to 20.2 mA | 0.14 mA | |
| Equipment to Output AC Current (at the listed frequencies) ^{FO} | t | | |
| 10 Hz to 44 Hz | 20.2 mA to 202 mA | 0.65 mA | |
| 45 Hz to 999 Hz | 20.2 mA to 202 mA | 0.2 mA | |
| 1 kHz to 10 kHz | 20.2 mA to 202 mA | 1.4 mA | |
| Equipment to Output AC Current (at the listed frequencies) ^{FO} | i i | | |
| 10 Hz to 44 Hz | 0.2 A to 2.02 A | 0.006 7 A | |
| 45 Hz to 999 Hz | 0.2 A to 2.02 A | 0.002 9 A | _ |
| 1 kHz to 5 kHz | 0.2 A to 2.02 A | 0.018 A | |
| Equipment to Output AC Current (at the listed frequencies) ^{FO} | | | |
| 30 Hz to 44 Hz | 2 A to 30 A | 0.083 A | |
| 45 Hz to 99 Hz | 2 A to 30 A | 0.03 A | _ |
| 100 Hz to 10 kHz | 2 A to 30 A | 0.13 A | |
| Equipment to Measure AC Curre (at the listed frequencies) ^{FO} | nt | | Fluke 8846A WI-19 |
| 10 Hz to 5 kHz | 3 A to 10 A | 4 mA + 0.18 % of reading | |
| Equipment to Measure AC Volta (at the listed frequencies) ^{FO} | ge | | |
| 5 Hz to 10 Hz | 0.1 mV to 100 mV | 0.04 mV + 0.42 % of reading | |
| 10 Hz to 20 kHz | 0.1 mV to 100 mV | 0.04 mV + 0.07 % of reading | |
| 20 kHz to 50 kHz | 0.1 mV to 100 mV | 0.05 mV + 0.14 % of reading | _ |
| 50 kHz to 100 kHz | 0.1 mV to 100 mV | 0.08 mV + 0.71 % of reading | _ |
| Equipment to Measure AC Volta (at the listed frequencies) ^{FO} | ge | 1 | _ |
| 5 Hz to 10 Hz | 0.1 V to 1 V | 0.3 mV + 0.42 % of reading | |
| 10 Hz to 20 kHz | 0.1 V to 1 V | 0.3 mV + 0.071 % of reading | |
| 20 kHz to 50 kHz | 0.1 V to 1 V | 0.5 mV + 0.14 % of reading | |
| 50 kHz to 100 kHz | 0.1 V to 1 V | 0.8 mV + 0.71 % of reading | |



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| Electrical | | | |
|--|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Equipment to Measure AC Voltage | ge | | Fluke 8846A WI-19 |
| 5 Hz to 10 Hz | 1 V to 10 V | 3 mV + 0.42 % of reading | |
| 10 Hz to 20 kHz | 1 V to 10 V | 3 mV + 0.071 % of reading | - |
| 20 kHz to 50 kHz | 1 V to 10 V | 5 mV + 0.14 % of reading | - |
| 50 kHz to 100 kHz | 1 V to 10 V | 8 mV + 0.71 % of reading | - |
| Equipment to Measure AC Voltage (at the listed frequencies) ^{FO} | ge | | - |
| 10 Hz to 20 kHz | 10 V to 100 V | 0.03 V + 0.071 % of reading | |
| 20 kHz to 50 kHz | 10 V to 100 V | 0.05 V + 0.14 % of reading | |
| 50 kHz to 100 kHz | 10 V to 100 V | 0.08 V + 0.71 % of reading | |
| Equipment to Measure AC Voltage (at the listed frequencies) ^{FO} | ge | | |
| 10 Hz to 20 kHz | 100 V to 1 000 V | 0.3 V + 0.071 % of reading | |
| 20 kHz to 50 kHz | 100 V to 1 000 V | 0.5 V + 0.14 % of reading | |
| 50 kHz to 100 kHz | 100 V to 1 000 V | 0.8 V + 0.71 % of reading | |
| Equipment to Output AC Voltage (at the listed frequencies) ^{FO} | | | Transmille 3041 WI-12 |
| 10 Hz to 45 Hz | 1 mV to 202 mV | 0.68 mV | |
| 45 Hz to 1 000 Hz | 7 mV to 202 mV | 0.14 mV | |
| 1 kHz to 20 kHz | 8 mV to 202 mV | 0.3 mV | |
| 20 kHz to 100 kHz | 8 mV to 202 mV | 2.8 mV | |
| 100 kHz to 500 kHz | 8 mV to 202 mV | 3.5 mV | |
| Equipment to Output AC Voltage (at the listed frequencies) ^{FO} | :: | | |
| 10 Hz to 45 Hz | 0.2 V to 2.02 V | 0.006 5 V | |
| 45 Hz to 1 000 Hz | 0.2 V to 2.02 V | 0.001 2 V | |
| 1 kHz to 20 kHz | 0.2 V to 2.02 V | 0.002 3 V | |
| 20 kHz to 100 kHz | 0.2 V to 2.02 V | 0.011 V | |
| 100 kHz to 500 kHz | 0.2 V to 2.02 V | 0.032 V | |
| Equipment to Output AC Voltage (at the listed frequencies) ^{FO} | ; | | |
| 10 Hz to 45 Hz | 2.02 V to 20.2 V | 0.065 V | |
| 45 Hz to 1 000 Hz | 2.02 V to 20.2 V | 0.011 V |] |
| 1 kHz to 20 kHz | 2.02 V to 20.2 V | 0.02 V | |
| 20 kHz to 100 kHz | 2.02 V to 20.2 V | 0.12 V | |



Automated Control Systems, Inc. dba ACS Calibration

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Accreditation is granted to the facility to perform the following calibrations:

| Electrical | | | |
|---|------------------------------------|--------------------------------|--------------------------|
| MEASURED INSTRUMENT, OUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS | CALIBRATION AND MEASUREMENT | CALIBRATION FOLIPMENT |
| QUARTITI OK GAUGE | APPROPRIATE | CAPABILITY EXPRESSED | AND REFERENCE |
| | | AS AN UNCERTAINTY (±) | STANDARDS USED |
| Equipment to Output AC Voltag | ge | | Transmille 3041 |
| (at the listed frequencies) ^{FO} | | 1 | WI-12 |
| 30 Hz to 45 Hz | 20.2 V to 202 V | 0.2 V | |
| 45 Hz to 1 000 Hz | 20.2 V to 202 V | 0.16 V | |
| 1 kHz to 20 kHz | 20.2 V to 202 V | 0.34 V | |
| Equipment to Output AC Voltag | ge | | |
| (at the listed frequencies) ^{FO} | 1 | 1 | |
| 30 Hz to 45 Hz | 202 V to 1 020 V | 1.1 V | |
| 45 Hz to 1 000 Hz | 202 V to 1 020 V | 0.71 V | |
| 1 kHz to 10 kHz | 202 V to 1 020 V | 2.7 V | |
| Temperature Calibration, | -200 °C to -100 °C | 0.59 °C | Transmille 3041A + |
| Indication and Control | -100 °C to 120 °C | 0.49 °C | EA001A |
| Thermocouple Type K ^{FO} | 120 °C to 1 370 °C | 0.54 °C | W1-21 |
| Temperature Calibration, | -100 °C to 150 °C | 0.47 °C | |
| Indication and Control | 150 °C to 1 200 °C | 0.39 °C | |
| Thermocouple Type I FO | | | |
| Temperature Calibration | 150 °C to 400 °C | 0.30 °C | |
| Indication and Control | -150 C t0 400 C | 0.57 C | |
| Equipment used with | | | |
| Thermosouple Type T ^{FO} | | | |
| Thermocouple Type T | | | |

Mass, Force, and Weighing Devices

| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
|---|---|---|---|
| Analytical Balances FO | 2 g to 300 g | 0.000 12% of Reading | ASTM Class 1 Weights |
| | 300.001 g to 500 g | 0.000 17% of Reading | WI-02 |
| Precision Balances FO | 500.001 g to 3 000 g | 0.012% of Reading | Class F Weights WI-02 |
| Bench Scales ^{FO} | 0.01 lbs. to 10 lbs. | 0.006 2% of Reading | Class F Weights |
| | 10.000 1 lbs. to 17 lbs. | 0.005 7% of Reading | WI-02 |
| | 17.001 lbs. to 750 lbs. | 0.018 % of Reading | |



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Accreditation is granted to the facility to perform the following calibrations:

| Mechanical | | | |
|---|---|---|---|
| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
| Pressure Gauges FO | 0.35 psi to 0.35 psi | 0.000 43 psi | Druck DPI 610 WI-01 |
| | -14 psi to 30 psi | 0.018 psi | Ametek IPI030 WI-01 |
| | 30 psi to 100 psi | 0.062 psi | Ametek IPIMKII100 WI-01 |
| | 100 psi to 500 psi | 0.31 psi | Ametek IPIMKII500 WI-01 |
| | 500 psi to 2 000 psi | 1.2 psi | Ametek IPIMKII2000 WI-01 |
| | 2 000 psi to 5 000 psi | 3.0 psi | Ametek IPI05KGBXXINDG |
| Torque Wrenches FO | 10 in•lb to 400 in•lb | 0.66 % of reading | CDI 4002-I-DTT WI-22 |
| | 33 ft•lb to 250 ft•lb | 1.2 % of reading | Proto J6476 WI-22 |

Time & Frequency

| MEASURED INSTRUMENT, QUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS APPROPRIATE | CALIBRATION AND MEASUREMENT CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | CALIBRATION EQUIPMENT AND REFERENCE STANDARDS USED |
|---|--|---|---|
| Rotational Speed, Noncontact | 60 rpm to 600 rpm | 0.54 rpm | Extech 461920 Tachometer |
| Measure ^{FO} | 600.1 rpm to 6 000 rpm | 5.1 rpm | WI-24 |
| | 6 001 rpm to 18 000 rpm | 17 rpm | |
| Tachometer, Rotational Speed | 60 rpm to 1 000 rpm | 0.19 rpm | Transmille 3041 |
| NonContact-Source FO | 1 001 rpm to 9 900 rpm | 1.2 rpm | WI-25 |
| | 9 901 rpm to 99 900 rpm | 2.3 rpm | |



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Certificate of Accreditation: Supplement

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| MEASURED INSTRUMENT, OUANTITY OR GAUGE | RANGE OR NOMINAL DEVICE SIZE AS | CALIBRATION AND MEASUREMENT | CALIBRATION EOUIPMENT |
|--|------------------------------------|---|--|
| | APPROPRIATE | CAPABILITY EXPRESSED AS AN UNCERTAINTY (±) | AND REFERENCE STANDARDS USED |
| Temperature Measurement FO | -196 °C to 0 °C | 0.049 °C | Fluke 5615 with Fluke 8846 |
| | 0 °C to 200 °C | 0.11 °C | Fluke 5627A with |
| | 200 °C to 420 °C | 0.17 °C | WI-03 |
| Temperature Source FO | -30 °C to 0 °C | 0.049 °C | Fluke 5615 with Fluke 8846 Fluke 5627 with Fluke 8846 |
| | 0 °C to 200 °C | 0.0.11 °C | WI-03 |
| | 200 °C to 420 °C | 0.17 °C | |
| Equipment to Measure Humidity ^{FO} | 30 % RH to 75 % RH | 1.7% RH | Vaisala HMT333 with Fluke 8846 WI-13 |

- 1. The CMC (Calibration and Measurement Capability) stated for calibrations included on this scope of accreditation represents the smallest measurement uncertainty attainable by the laboratory when performing a more or less routine calibration of a nearly ideal device under nearly ideal conditions. It is typically expressed at a confidence level of 95 % using a coverage factor k (usually equal to 2). The actual measurement uncertainty associated with a specific calibration performed by the laboratory will typically be larger than the CMC for the same calibration since capability and performance of the device being calibrated and the conditions related to the calibration may reasonably be expected to deviate from ideal to some degree.
- 2. The laboratories range of calibration capability for all disciplines for which they are accredited is the interval from the smallest calibrated standard to the largest calibrated standard used in performing the calibration. The low end of this range must be an attainable value for which the laboratory has or has access to the standard referenced. Verification of an indicated value of zero in the absence of a standard is common practice in the procedure for many calibrations but by its definition it does not constitute calibration of zero capacity.
- 3. The presence of a superscript FO means that the laboratory performs calibration of the indicated parameter both at its fixed location and onsite at customer locations. Example: Outside Micrometer^{FO} would mean that the laboratory performs this calibration at its fixed location and onsite at customer locations.
- 4. Measurement uncertainties obtained for calibrations performed at customer sites can be expected to be larger than the measurement uncertainties obtained at the laboratories fixed location for similar calibrations. This is due to the effects of transportation of the standards and equipment and upon environmental conditions at the customer site which are typically not controlled as closely as at the laboratories fixed location.
- 5. The term L represents length in inches or millimeters as appropriate to the uncertainty statement.
- 6. The term Wt represents weight in pounds or grams (including SI multiple and submultiple units) appropriate to the uncertainty statement.